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EXAMINER	
GODBOLD, DOUGLAS	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/781,443	Applicant(s) AZARA ET AL.	
	Examiner Douglas C. Godbold	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *09 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response correspondence filed August 9, 2007 in reference to application 10/781,443. Claims 1-22 are pending in the application and have been examined.

Response to Amendment

2. The amendments to the claims, drawings and specification filed August 9, 2007 have been accepted and considered in this application. The objections to the specification and the drawings have been withdrawn in result to the amendments. Amendments to claims 1, 11, 21 and 22 have been accepted and considered in this office action.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 11, 21, and 22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 21 attempts to claim a carrier wave.

However, this is considered non-statutory under 35 U.S.C. 101. Therefore claim 21 is rejected.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (Visualizing spoken discourse) in view of Jurafsky et al (Automatic Detection of Discourse Structure for Speech Recognition and Understanding).

9. Consider claim 1, Yang teaches a method of determining a predictive model for discourse functions (the relationship between discourse and prosody are modeled graphically, abstract.) comprising the steps of:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last paragraph. Sections 2.1.1, - 2.4.2 show other examples of how prosodic features indicate discourse features.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

However Yang does not specifically teach wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of Discourse modeling, Jurafsky teaches a predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function (Described is an approach for modeling and detection of discourse structure for recognized speech; abstract and following paragraph. Figure 1 shows a diagram of this process. Section 3.3 discusses the set up

the discourse models, using n-grams, which is a based on the likelihood that a speech reflects the discourse function.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make the discourse model applicable to detecting discourse in recognized speech as taught by Jurafsky with the modeling of Yang in order to allow for a more accurate automatic detection of discourse in recognized speech enabling systems like spontaneous dialog understanding and other applications (Jurafsky, introduction.).

10. Consider claim 2, Yang teaches the method of claim 1, in which the discourse functions are determined based on a theory of discourse analysis (The speech data were digitized and annotated for discourse relations; page 1, column 2, line 18. It is inherent that in order to annotate discourse relations, and therefore analysis discourse, it must be based on some theory of discourse analysis.)

11. Consider claim 6, Yang teaches the method of claim 1, in which the prosodic features occur in at least one of a location: preceding, within and following the associated discourse function (In order to capture the different domains at which prosodic patterns are manifested, we analyzed the data at the within-phrase as well as the inter-phrase level, page 2 column 2, line 30. By doing this, prosodic features will be analyzed before and after as well as during the discourse function.).

12. Consider claim 7, Yang teaches the method of claim 1, in which the prosodic features are encoded within a prosodic feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. The data would inherently be reference together for each measurement, creating a feature vector.).

13. Consider claim 8, Yang teaches the method of claim 7, in which the prosodic feature vector is a multimodal feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. These three acoustical measurements form a multimodal feature vector for the purpose of correlation with discourse characteristics.).

14. Consider claim 9, Yang teaches the method of claim 1, in which the discourse function is an intra- sentential discourse function (section 2.1.1 shows the prosodics for the discourse function of demanding new information, which is an intra-sentential function.)

15. Consider claim 10, Yang teaches the method of claim 1, in which the discourse function is an intra- sentential discourse function (section 2.2.3 shows the prosodics for the discourse function of topic shifting, which is an inter-sentential function.)

16. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Jurafsky as applied to claim 2 above, and further in view of Chino (US Patent 5,761,637).

Yang and Jurafsky teaches the method of claim 2, but does not specifically teach that the theory of discourse analysis is at least one of: the Linguistic Discourse Model, the Unified Linguistic Discourse Model, Rhetorical Structure Theory, Discourse Structure Theory and Structured Discourse Representation Theory.

However, In the same field of Discourse analysis, Chino teaches using Discourse Structure Theory for discourse analysis (Figure 7 shows a generated discourse structure for the speech input, column 6 line 13- column 7 line 28.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the discourse structure theory as taught by Chino for doing discourse analysis as taught by Yang and Jurafsky in order to provide a specific method for discourse analysis, allowing the structure of a conversation to be observed in a method that is well known to those skilled in the art of linguistic analysis.

17. Claims 4, 5, 11, 12, and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Jurafsky as applied to claim 1 above, and further in view of Shriberg et al (Prosody-Based Automatic Segmentation of Speech into Sentences and Topics).

18. Consider claim 4, Yang and Jurafsky teaches the method of claim 1, but does not specifically teach the predictive models are determined based on at least one of: machine learning, rules.

In the same field of speech analysis, Shriberg teaches predictive models determined based on at least one of: machine learning, rules (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse, eliminating discrepancies in discourse mapping that is introduced by human error, and also saving valuable human work hours.

19. Consider claim 5, Shriberg teaches the method of claim 4, in which the machine learning based predictive models are determined based on at least one of: statistics, decision trees, Naive Bayes (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

20. Consider claim 11, Yang teaches a system for determining predictive discourse function models (the relationship between discourse and prosody are modeled graphically, abstract.) comprising:

an input/output circuit for retrieving a corpus of at least one speech utterance (the speech data was digitized; page 1, column 2, line 18.);

and determining prosodic features associated with the at least one speech utterance (Acoustic measurements of the speech are taken such as f0, amplitude, page 1, column 2 line 23.), and which determines at least one discourse function associated with the corpus of at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.) and determines at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last paragraph. Sections 2.1.1, - 2.4.2 show other examples of how prosodic features indicate discourse features.) and determines a predictive model for discourse functions based on the prosodic features and the discourse function (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

Yang does not specifically teach that the processor itself does the analysis to determine the model between prosody and discourse and

wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of text analysis, Shriberg teaches using the processor to relate prosody to text functions. (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a processor inherent, abstract line 3.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

However Yang and Shriberg does not specifically teach wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of Discourse modeling, Jurafsky teaches a predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function (Described is an approach for modeling and detection of discourse structure for recognized speech; abstract and following paragraph. Figure 1 shows a diagram of this process. Section 3.3 discusses the set up the discourse models, using n-grams, which is a based on the likelihood that a speech reflects the discourse function.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make the discourse model applicable to detecting discourse in recognized speech as taught by Jurafsky with the modeling of Yang in order to allow for

a more accurate automatic detection of discourse in recognized speech enabling systems like spontaneous dialog understanding and other applications (Jurafsky, introduction.).

21. Consider claim 12, Yang teaches the system of claim 11, in which the discourse functions are determined based on a theory of discourse analysis (The speech data were digitized and annotated for discourse relations; page 1, column 2, line 18. It is inherent that in order to annotate discourse relations, and therefore analysis discourse, it must be based on some theory of discourse analysis.)

22. Consider claim 14, Shriberg teaches the system of claim 11, wherein the predictive models are determined based on at least one of: machine learning, rules (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

23. Consider claim 15, Shriberg teaches the system of claim 14, in which the machine learning based predictive models are determined based on at least one of: statistics, decision trees, Naive Bayes (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, abstract line 3.).

24. Consider claim 16, Yang teaches the system of claim 11, in which the prosodic features occur in at least one of a location: preceding, within and following the associated discourse function (In order to capture the different domains at which prosodic patterns are manifested, we analyzed the data at the within-phrase as well as the inter-phrase level, page 2 column 2, line 30. By doing this, prosodic features will be analyzed before and after as well as during the discourse function.).

25. Consider claim 17, Yang teaches the system of claim 11, in which the prosodic features are encoded within a prosodic feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. The data would inherently be reference together for each measurement, creating a feature vector.).

26. Consider claim 18, Yang teaches the system of claim 17, in which the prosodic feature vector is a multimodal feature vector (The acoustic measurements of f0, amplitude and duration were correlated with the specific characteristics; page 2, column 2, line 23. These three acoustical measurements form a multimodal feature vector for the purpose of correlation with discourse characteristics.).

27. Consider claim 19, Yang teaches the system of claim 11, in which the discourse function is an intra- sentential discourse function (section 2.1.1 shows the prosodics for

the discourse function of demanding new information, which is an intra-sentential function.)

28. Consider claim 20, Yang teaches the system of claim 11, in which the discourse function is an intra- sentential discourse function (section 2.2.3 shows the prosodics for the discourse function of topic shifting, which is an inter-sentential function.)

29. Consider claim 21, Yang teaches:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (sections 2.1.1, - 2.4.2 discuss how prosodic features indicate discourse features, such as demanding of information, etc.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

But Yang does not specifically teach a carrier wave encoded to transmit a control program with instructions to complete the above steps and

wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of speech analysis, Shriberg teaches using a computer program to do speech analysis (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a software program inherent, abstract line 3. A software program can obviously be carried on a carrier wave.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

However Yang and Shriberg does not specifically teach wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of Discourse modeling, Jurafsky teaches a predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function ((Described is an approach for modeling and detection of discourse structure for recognized speech; abstract and following paragraph. Figure 1 shows a diagram of this process. Section 3.3 discusses the set up the discourse models, using n-grams, which is a based on the likelihood that a speech reflects the discourse function.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make the discourse model applicable to detecting discourse in recognized speech as taught by Jurafsky with the modeling of Yang in order to allow for a more accurate automatic detection of discourse in recognized speech enabling systems like spontaneous dialog understanding and other applications (Jurafsky, introduction.).

30. Consider claim 22, Yang teaches:

determining a corpus of speech utterances (Our data for this research consists of fifteen dialogue segments extracted from a corpus of 2 hours of spontaneous conversation; page 1, column 2, line 18.);

determining a least one discourse function associated with at least one speech utterance (The speech data were digitized and annotated for discourse relations, topic structure, interruptions, and speaker turns; page 1, column 2, line 18.);

determining at least one prosodic feature associated with the at least one discourse function (These prosodic features are direct results of the immediacy and urgency of the interrupter's demand for additional information; section 2.1.1 last paragraph. Sections 2.1.1, - 2.4.2 show other examples of how prosodic features indicate discourse features.); and

determining at least one predictive model of discourse functions based on the prosodic features and the discourse functions (the relationship between discourse and prosody are modeled graphically for a conversation, abstract.).

But Yang does not specifically teach that these steps are executed with a computer readable medium comprising computer code usable to complete the above steps and

wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of speech analysis, Shriberg teaches a computer readable medium comprising computer code usable to complete speech analysis (Prosody models are generated using HHM and decision trees in order to segment and determine the topic of the speech, which are machine learning techniques, making a software program inherent, abstract line 3. A software program must inherently be stored on a computer readable medium in order to be executed.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the machine learning techniques with a processor of Shriberg and apply them to the mapping of Prosody to Discourse as taught by Yang in order to provide a completely automated method for determining the mappings of Prosody to discourse.

However Yang and Shriberg does not specifically teach wherein the predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function.

In the same field of Discourse modeling, Jurafsky teaches a predictive model of discourse functions is operable to predict a likelihood that a specific recognized speech reflects a specific discourse function ((Described is an approach for modeling and

detection of discourse structure for recognized speech; abstract and following paragraph. Figure 1 shows a diagram of this process. Section 3.3 discusses the set up the discourse models, using n-grams, which is a based on the likelihood that a speech reflects the discourse function.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to make the discourse model applicable to detecting discourse in recognized speech as taught by Jurafsky with the modeling of Yang in order to allow for a more accurate automatic detection of discourse in recognized speech enabling systems like spontaneous dialog understanding and other applications (Jurafsky, introduction.).

31. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Shriberg in view of Jurafsky as applied to claim 11 above, and further in view of Chino.

32. Consider claim 13, Yang in view of Shriberg in view of Jurafsky teaches the system of claim 12, but does not specifically teach that the theory of discourse analysis is at least one of: the Linguistic Discourse Model, the Unified Linguistic Discourse Model, Rhetorical Structure Theory, Discourse Structure Theory and Structured Discourse Representation Theory.

However, In the same field of Discourse analysis, Chino teaches using Discourse Structure Theory for discourse analysis (Figure 7 shows a generated discourse structure for the speech input, column 6 line 13- column 7 line 28.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the discourse structure theory as taught by Chino for doing discourse analysis as taught by Yang and Jurafsky in order to provide a specific method for discourse analysis, allowing the structure of a conversation to be observed in a method that is well known to those skilled in the art of linguistic analysis.

Conclusion

33. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas C. Godbold whose telephone number is (571) 270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

Patrick N. Edouard

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER